

THE WATERSHED AND STUDY AREA

A. General Characteristics

The Pigeon River is located in the north-central part of the southern peninsula of Michigan. Its headwaters are located a few miles northeast of Gaylord. The river then flows in a northerly direction to its mouth at Mullet Lake, a distance of 42 miles. The Pigeon River system drains a surface area of approximately 88,000 acres and include 80 linear miles of stream.

The Pigeon is one of Michigan's outstanding trout streams and is the favorite of a large number of anglers who return annually. The river receives large amounts of ground water, especially in the upper reaches. This high quality water coupled with high quality trout habitat is conducive to good natural reproduction. Approximately one-third of the stream mileage in the river system flows through lands in public ownership.



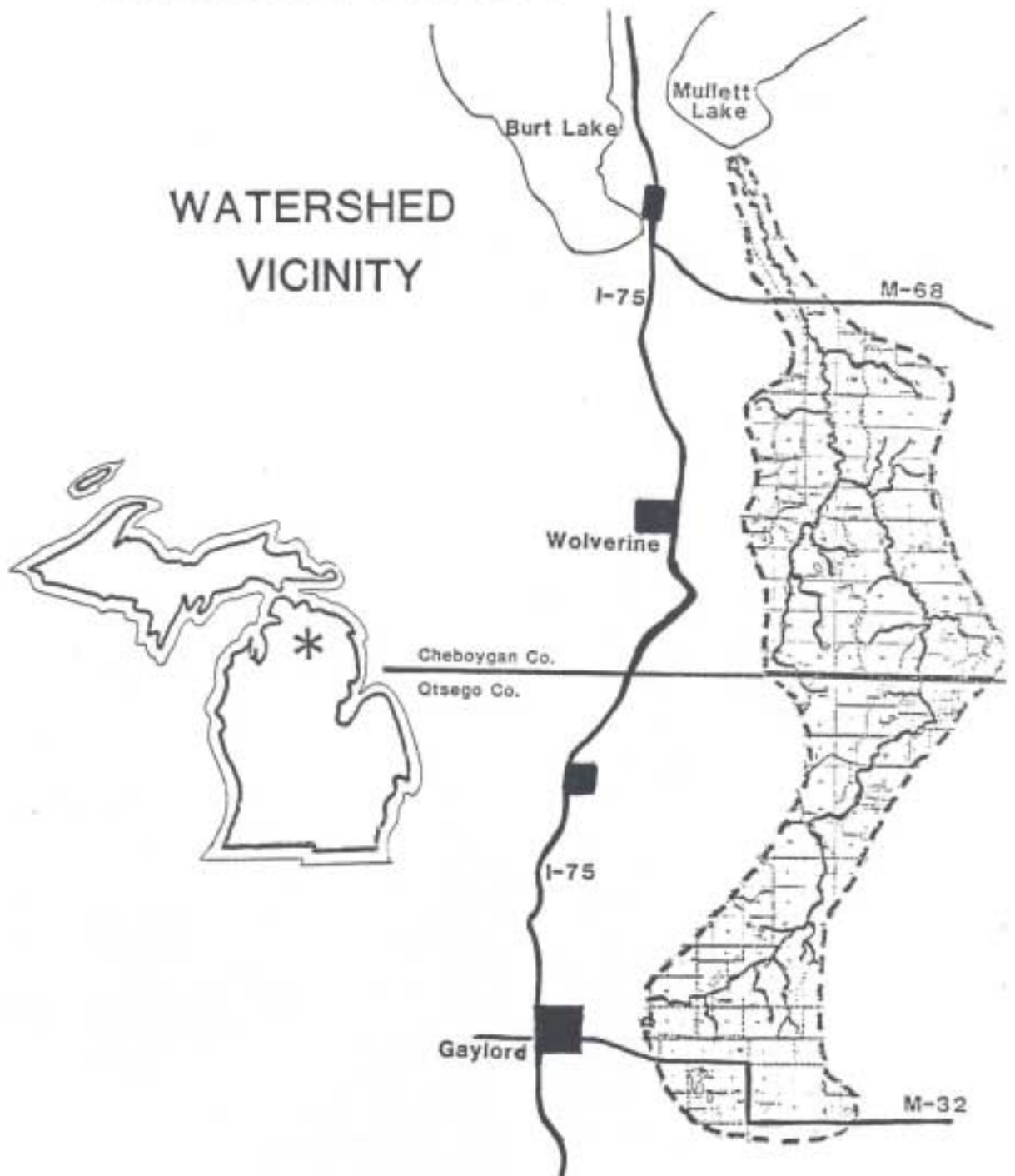
Pigeon River Mainstream
near "County Parking Lo
Otsego County

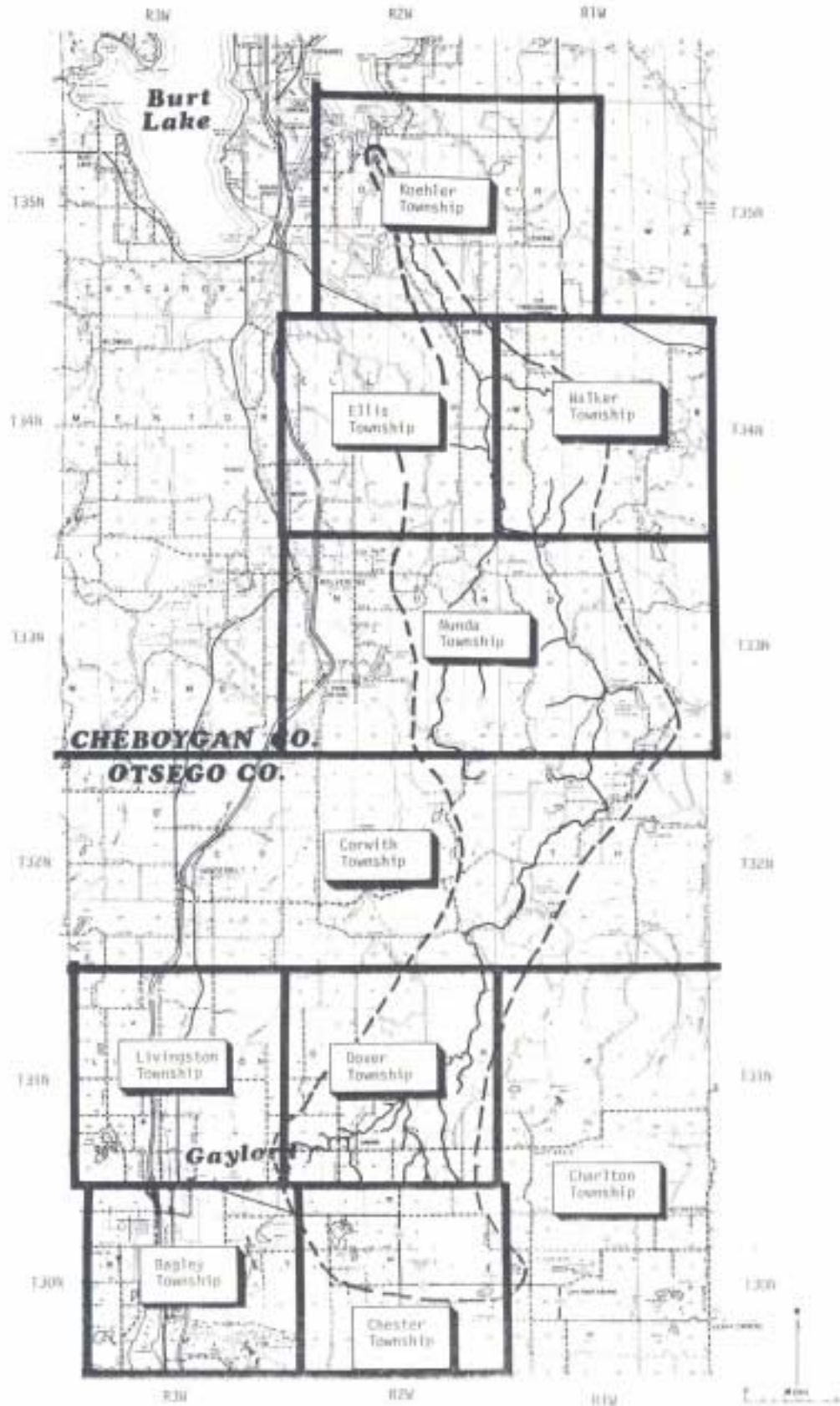
Pigeon River Mainstream
Ostrander Road ending
Cheboygan County



PIGEON RIVER

WATERSHED VICINITY





Local Governmental Units

B. Accessibility

The Pigeon River watershed is readily accessible by automobile. The west side of the watershed is bounded by I-75, on the east is M-33 and to the south is M-32. A few miles before the Pigeon River empties into Mullet Lake, M-68 crosses the mainstream.

In addition, there are many miles of county roads, forest trails and fire lanes in the watershed.

There are 15 road bridges crossing the Pigeon mainstream, averaging roughly one every three miles of river.

C. Area Government

The Pigeon River watershed is located entirely in Cheboygan and Otsego counties. In Otsego County, the townships of Chester, Dover and Corwith have portions of the Pigeon River in their boundaries. In Cheboygan County, Nunda, Ellis, Walerk and Koehler townships all have portions of the Pigeon River located in them. All of these townships are affected by countywide zoning. There are no cities or villages located in the watershed.

D. Physiography and Soils

Soils can be grouped into associations based on texture and drainage characteristics. The soil associations throughout the Pigeon River watershed along with their various characteristics can be seen on the map on the following page, along with the accompanying table.

The topography of the Pigeon River is similar to most northern Michigan watersheds. At its headwaters, the elevation of the river is approximately 1,140 feet. The elevation of the Pigeon at its mouth is about 595 feet. The Pigeon River thus drops 545 feet in 42 miles, averaging 13.0 feet drop per river mile.

The headwaters of the Pigeon flow northward down the inner slope of a prominent glacial moraine that was deposited in front of the Port Huron ice sheet some 13,000 years ago. The crest of this ridge forms the drainage divide between the Pigeon on the north and the AuSable River on the south. The Pigeon continues generally northward, cutting through a series of lesser morainal ridges left by the retreating ice. Between the ridges are terraces of sand and gravel outwash deposited by meltwaters. A few miles north of the Village of Afton, the river crosses an area of sandy lakebeds that were load down by ponded meltwater south of the ice front. The mantel of glacial drift is relatively thin from McIntosh Landing to a few miles below Afton, and limestone bedrock is exposed in several places.

E. Stream Characteristics

The Pigeon River system contains approximately 80 linear miles of streams – 42 miles of mainstream and 38 miles of tributary.

Summary of Streams

	Miles
Mainstream (includes all channels)	42.0
South Branch (Duck Creek)	5.5
Little Pigeon	9.5
McIntosh Creek	1.5
Nelson Creek	2.0
Wilkes Creek	5.0
Cornwall Creek (from outfall of flooding)	0.5
Molby Creek	2.0
Unnamed tributaries	12.0



Pigeon River
near headwaters

South Branch
(Duck Creek)



The Pigeon River has a moderately fast stream gradient dropping 545 feet from its source east of Gaylord to Mullet Lake. The average drop in elevation over this 42 miles of river is approximately 13 feet per mile. One area has a greater gradient than the average. About a mile above Afton, then downstream for four to five miles, the river drops 100 feet, or roughly 22 feet per mile.

The Pigeon River system originates in central Otsego County several miles east of Gaylord. Its beginning is an area of swamps separated by high rolling hills. The river flows generally north until it empties into Mullet Lake in Cheboygan County.

From its headwaters to the Lansing Club Dam, a total of about 14 miles, the river flows through mostly private lands. The river's headwaters in the vicinity of the Village of Sparr is composed of small feeder streams about 3-4 feet wide and less than three feet deep. The streambed is predominately sand although some gravel is found.

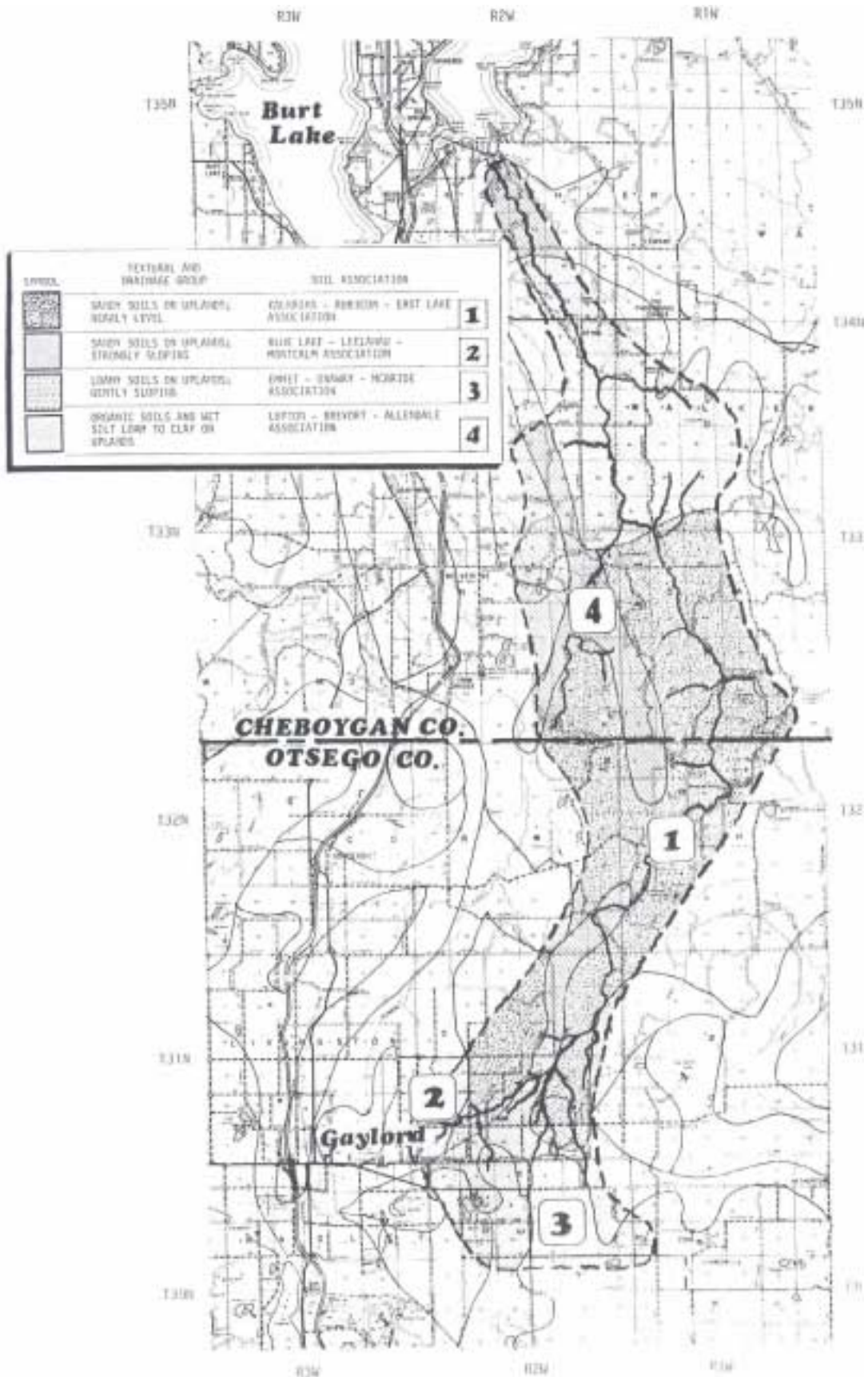
Below the Marquardt Road Bridge north of Sparr, the streambed is predominately gravel all of the way to the Lansing Club Dam Pond. Here the river is usually 25 to 35 feet wide. The predominant stream bank vegetation in this area is coniferous swamp and this stretch of stream is usually less than three feet deep with numerous windfallen trees and logjams.

A few miles above the Lansing Club Dam, the river enters the 83,000 acre Pigeon River Country State Forest Area. In this 145 square mile tract of land, there are very few private holdings; thus the forest provides a uniquely large contiguous area for many recreational pursuits.

From the Sturgeon Valley Road Bridge below the Lansing Club Dam to Tin Bridge is a little more than eight river miles. Here the river flows out of Otsego County and into Cheboygan County. Along this stretch of river is the Pigeon Bridge Forest Campground, and the Pigeon River State Forest Campground. These two campgrounds have ten and 19 campsites respectively. Also located along this stretch of river is the Pigeon River Country State Forest Area headquarters, and the Elk Hill Trail Camp for horseback riders.

The streambed from the Sturgeon Valley Road Bridge to Tin Bridge is almost entirely gravel. Boulders are found throughout this stretch of river, particularly about one mile below the Pigeon River State Forest Campground and for about a mile above Tin Bridge.

From Tin Bridge to Red Bridge is about four miles. Located midway between the two bridges is Pine Grove Campground which offers eight campsites. The streambed is predominantly gravel for the first one-half miles below Tin Bridge. For the next two miles, the streambed is mostly sand and then gravel and boulders for the last mile and one-half to Red Bridge. This area of the mainstream also has several very steep banks as well as an extensive area of clay banks near the campground.



Soil Associations

The next bridge after Red Bridge is the Pigeon River Road Bridge. It is located approximately five and one-half miles downstream. Located in this stretch of river is McIntosh Landing about one mile from Red Bridge in Pigeon River Country State Forest. McIntosh Landing is often used as an undeveloped campground and canoe launch. This stretch of river, down to M-68 near Afton, is probably the most popular with canoeists. Most of the windfalls have been cleared from this portion of the stream. Low water, which occurs frequently during the summer months, may cause some scraping of the bottom of the canoe and often offers a challenge in picking the best channel.

The streambed from Red Bridge to McIntosh Landing is generally boulders and sand and gravel mix. Below McIntosh Landing for about one mile is an area of mostly sand. About one mile above Pigeon River Road Bridge is an area where the stream bottom is predominantly rock. In the vicinity of Pigeon River Road to Munger Road Bridge, again there is a portion of the stream where the bottom is predominantly rock. The bottom downstream is again gravel.

Below M-68 for approximately four miles the streambed is mostly gravel. It is here where most of the Pigeon's higher banks are located.

About four miles from where the river enters Mullett Lake is the "spreads" area. Here the mainstream breaks up into several channels and portages are required.

F. Water Quality

The Michigan Water Resources Commission has established by administrative rules intrastate water quality standards and use designations for the Pigeon River. It is to be protected for recreation – total body contact (i.e., swimming); intolerant fish – cold water species; industrial water supply; agricultural and commercial water supply; and other uses. Where water is to be protected for more than one use under these standards, the most restrictive individual standard of designated water use applies. Also, if existing water quality is superior to the designated use requirements, it must be maintained at that level until it has been adequately demonstrated to the Michigan Water Resources Commission that the change in quality does not or will not become injurious to the public health, safety or welfare, or become injurious to any other uses being made of such waters.

Studies conducted on the Pigeon River by the Bureau of Environmental Protection staff, Department of Environmental Quality, indicate that the quality of the waters within the Pigeon River basin meet or exceed all standards, as mentioned above, established for the river. There is no municipal or industrial waste being discharged into the Pigeon River.

Only six small lakes drain into the Pigeon River, with Lake 15 in Otsego County being the largest at 30 acres. There are also several small impoundments on streams in the system, Lansing Club Pond on the mainstream and Cornwall Fisheries Flooding on Cornwall Creek are the largest. Although the warmer waters from these lake outlets and ponds influence water temperatures for short distances downstream, the water cools sufficiently to support a variety of coldwater fish species during most of the year. During

warmer summers, the effect of the Lansing Club Pond creates marginal water temperatures for trout.

G. Vegetation

The Pigeon River and its tributaries flow through a variety of vegetative conditions. Major types found within the study area include swamp conifers (white cedar, black spruce, balsam fir and tamarack), lowland brush (tag alder), lowland hardwoods (aspen, elm, black ash and red maple), upland hardwood (aspen), pine uplands (red pine, white pine and jack pine) and grassy meadows.

Vegetative conditions in different sections of the river vary considerably. The upper portion of the river (south of Sturgeon Valley Road) has, as the primary vegetative cover, conifer swamps which are found along about 67 percent of this portion of the river. On all of this upper portion of the river, the adjoining land is poorly drained, therefore, the plant communities are those commonly found on wet sites. Lowland brush covers about 16 percent of the river's length in this stretch, grassy meadow ten percent, and lowland hardwood six percent.

The next section of the river between Sturgeon Valley Road and Pine Grove Campground is considerably different. The riverbanks are higher, resulting in noticeable vegetative changes. Upland hardwoods are found over about one-quarter of this length with upland pine on an additional eight percent. Forty percent of the length has swamp conifers with the remaining in lowland hardwoods and lowland brush.



Pigeon River mainstream, Otsego County

North of Pine Grove Campground, the character of the vegetative cover again changes with lowland hardwoods nearly totally dominating the riverbanks to a point just south of

Afton. The river then flows through a plant community of upland hardwood dominated by aspen with scattered white and red pine. From Blats Landing north to where the river empties into Mullet Lake, the river bank vegetation is again dominated by lowland hardwoods and lowland brush with a small amount of grassy meadow.

H. Climate

The climate in the Pigeon River area is favorable for the summer recreationists with pleasant daytime temperatures and cool nights. Temperatures during the summer months average five degrees cooler than in southern lower Michigan. The average annual precipitation is 29 inches at Vanderbilt and 27 inches at Cheboygan. Considerable precipitation falls as snow in the winter. Average annual snowfall is 80 inches at Vanderbilt and 74 inches at Cheboygan. The average annual temperature is 43 degrees with the highest monthly maximum temperatures occurring in July (66F at Vanderbilt, 68F at Cheboygan) and the lowest monthly maximum temperatures occurring in February (18F at Vanderbilt, 20F at Cheboygan).

I. Ownership

The Pigeon River watershed contains roughly 88,000 acres of land. Of this total , 51,900 (59 percent) are in private ownership. The remaining 36,100 acres are in state ownership within the boundaries of the Mackinac State Forest.

Ownership along the Pigeon River and its tributaries is summarized as follows:

	Estimate of River Miles State Land (Frontage)		Estimate of River Miles Private Land (Frontage)	
Mainstream	11.0	(22.0)	31.00	(62.00)
Little Pigeon	.50	(1.0)	9.00	(18.00)
All Other	13.00	(26.00)	15.50	(31.00)
Tributaries				
	<u>24.50</u>	<u>(49.0)</u>	<u>55.50</u>	<u>(111.00)</u>
	(30%)		(70%)	